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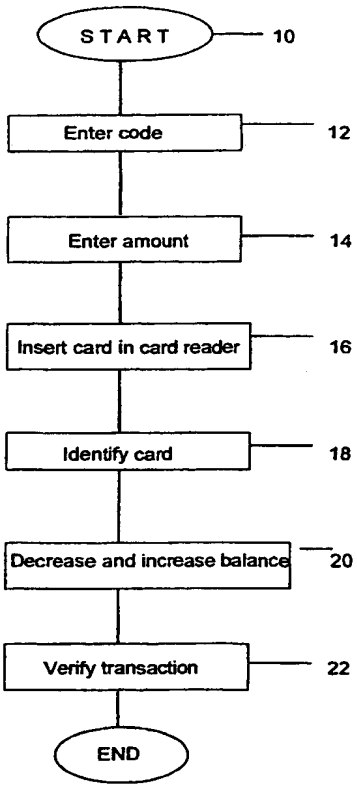
(54) Title: A METHOD FOR PERFORMING FINANCIAL TRANSACTIONS AND A SYSTEM FOR PERFORMING THE METHOD



(57) Abstract: The present invention relates to a method for performing financial transactions with the aid of a mobile telephone, a telephone or a modem, and also a system for performing the method. The method comprises the steps of: entering a code in the mobile telephone, telephone or modem for identification; entering an amount for a financial transaction; inserting a card into a card reader incorporated in the mobile telephone, telephone or modem; the mobile telephone, telephone or modem identifying the card; decreasing the balance on the mobile telephone, telephone or modem by said amount and increasing the balance on the card by said amount, or vice versa; and the mobile telephone, telephone or modem verifying the financial transaction.

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— *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

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A METHOD FOR PERFORMING FINANCIAL TRANSACTIONS AND A SYSTEM FOR PERFORMING THE METHOD

Technical field

In a first aspect the present invention relates to a method for performing financial transactions with the aid of a mobile telephone, a telephone or a telephone and a modem.

In accordance with a second aspect the present invention relates to a system for performing the method.

Background art

Systems and methods for electronically performing financial transactions are becoming increasingly popular. It is known to use "smart cards" to pay for telephone calls in public telephones. It is also known to use such cards when paying for parking time in parking meters.

The European patent application EP-A1-0 785 534 describes a system and a method for performing financial transactions with the aid of mobile telephones. The mobile telephones communicate via base stations with a network to which various suppliers of services are connected. Each supplier of services is equipped with a security module comprising means for secure transactions. A card is placed in the mobile telephone to identify the user to the system. A drawback with this system is that each supplier of services must be equipped with a security module. Neither can financial transactions take place between two different mobile telephones.

Document WO 96/32700 describes an electronic transaction terminal, e.g. a mobile telephone, for use in performing financial transactions electronically, in combination with a smart card and a communication module. The communication module is used to electronically transfer funds from a smart card, which is inserted in the transaction terminal, to a recipient of the payment.

Document WO 94/11849 describes a mobile telephone system and a method for performing financial transactions with the aid of a mobile telephone system. The system comprises at least one mobile telephone which, via the telephone network, is connected to the central computer of the supplier of services, comprising the payment system. The system uses the SIM card of the mobile telephone when performing the financial transactions.

Document WO 96/25828 describes a system for effecting payments. The user can carry out internal bank transfers, using a mobile telephone, from the bank account to a module card or vice versa.

Summary of the invention

The object of the present invention is to solve the problems mentioned above. This is achieved using a method for performing financial transactions with the aid of a mobile telephone, a telephone or a telephone and a modem as defined in claim 1, and also a system for performing the method as defined in claim 8. The method comprises the steps of:

- entering a code in the mobile telephone, telephone or modem for identification;
- entering an amount for a financial transaction;
- inserting a card into a card reader incorporated in the mobile telephone, telephone or modem;
- the mobile telephone, telephone or modem identifying the card;
- decreasing the balance on the mobile telephone, telephone or modem by said amount and increasing the balance on the card by said amount, or vice versa; and
- the mobile telephone, telephone or modem verifying the financial transaction.

A flexible solution is thus obtained in which the telephone functions as "wallet" and the card acts as "purse". High security is also obtained, without the use of separate security modules. This solution also offers increased opportunity for contact between bank and bank customer 24 hours a day. The banks therefore require fewer staff to carry out normal bank transactions.

In this respect it is an advantage if the card is a smart card.

A further advantage in this connection is, if the balance is less than said amount,

- that the mobile telephone, telephone or modem displays an error message; and
- that the user acknowledges the error message, whereupon the financial transaction is interrupted.

In this connection it is an advantage if the code entered is a PIN code different from the PIN code required for opening the telephone function on the mobile telephone.

Another advantage in this connection is if the procedure starts with the step of:

- the user selecting the type of transaction by a choice of menu on the mobile telephone, telephone or modem.

In this connection it is an advantage if the owner of the mobile telephone, telephone or telephone and modem and the owner of the card via which the financial transaction is performed are one and the same person.

According to another alternative if the owner of the mobile telephone, telephone or telephone and modem and the owner of the card via which the financial transaction is performed are not one and the same person.

The system for performing financial transactions comprises:

- a card comprising memory means and a data-processing device,
- a card reader incorporated in a mobile telephone, telephone or modem,
- an input unit incorporated in the mobile telephone, telephone or modem for entering identification code and the amount involved in the financial transaction, for instance,
- a security device for encryption of data, connected to the card reader and the input unit,
- a communication means incorporated in the mobile telephone, telephone or modem and connected to the security device for communication with the bank where the account is held, for instance.

A flexible solution is thus obtained in which the telephone can function as "wallet" and the card can function as "purse". High security is also obtained, as well as the opportunity of performing financial transactions directly between two different mobile telephones.

In this connection it is an advantage if the system also includes a presentation unit for displaying information, e.g. menu selection, in the mobile telephone, telephone or modem.

A further advantage in this connection is if said card is a smart card.

It is an advantage in this connection if the identification code for the card is a PIN code different from the PIN code for opening the telephone function of mobile telephone.

Embodiments of the invention will now be described in more detail by means of examples, with reference to the accompanying drawings.

Brief description of the drawings

Figure 1 shows a flow chart for a method for performing financial transactions in accordance with the present invention;

Figure 2 shows schematically one embodiment of a system for performing financial transactions in accordance with the present invention; and

Figure 3 shows various uses of the system illustrated in Figure 2.

Detailed description of embodiments

Figure 1 shows a flow chart for a method for performing financial transactions in accordance with the present invention. The method in accordance with the invention starts at block 10. It then continues, via block 12, with entering a

code in the mobile telephone or modem, for identification. The code entered is preferably a PIN code different from the PIN code required for opening the telephone function on the mobile telephone, for instance. Said code may of course be some other suitable code that ensures that no unauthorised person can perform the financial transaction. Several codes may be required in order to further increase security. An example of such a sequence of codes is a PIN code following by the bank's requirements, e.g. civic registration number, account number, the telephone number of the telephone and a unique number only known to the bank. The two last numbers are transmitted automatically at the transaction. The method continues at block 14 where the amount involved in the financial transaction is entered. Thereafter, at block 16, the method continues by a card being inserted into a card reader incorporated in the mobile telephone, telephone or modem. Said card is preferably a card of the smart card type. Such smart cards generally comprise an integrated circuit which can store various data and which can also perform data processing of various types. The method continues at block 18 with the mobile telephone, telephone or modem identifying the card. Thereafter, at block 20, the method continues by decreasing the balance on the mobile telephone, telephone or modem by said amount and increasing the balance on the card by said amount, or vice versa. It is thus possible to transfer electronic money from the card to the mobile telephone, telephone or modem or from the mobile telephone, telephone or modem to the card. The method continues at block 22 where the mobile telephone, telephone or modem verifies the financial transaction. The method is then completed at block 24.

In the event of the balance, either on the card or on the mobile telephone, telephone or modem, being less than said amount for the financial transaction, the following steps are performed:

- the mobile telephone, telephone or modem displays an error message; and
- the user acknowledges the error message, whereupon the financial transaction is interrupted.

To make the method more user friendly the user may choose the type of transaction by selecting a menu on the mobile telephone, telephone or modem.

Naturally the financial transactions described above may be performed using the owner of the mobile telephone's own card or another person's card. In the case of another person's card the PIN code for opening the mobile telephone is entered, for instance, in order to perform financial transactions.

It is also possible to select/check the bank/account balance either through an individual menu selection on the mobile telephone, telephone or modem, or as an extra function when withdrawing money from an account.

An additional advantage is if the mobile telephone, telephone or modem is able to store several different currencies.

Another advantage is if, for instance, the mobile telephone has been stolen or lost, the bank can remove the sum of money stored there, which is then transferred to the owner's account. This is on condition that the owner notifies the bank of the theft or loss of the mobile telephone.

Figure 2 shows schematically one embodiment of a system 30 for performing financial transactions in accordance with the present invention. As is clear from Figure 2, the system 30 comprises a card reader 34 for reading a card 32, also included in the system 30. Said card 32 comprises at least one memory device (not shown) and a data-processing device (not shown). The card 32 may preferably be a "smart card". The card reader 34 may be incorporated in a mobile telephone, telephone or modem. The system 30 also includes an input unit 36 for entering identification codes, for instance or amounts involved in financial transactions. The input unit 36 may be incorporated in a mobile telephone, telephone or modem and consist, for instance, of an ordinary alphanumerical keyset. The system 30 also comprises a security device 38 for encryption of data, connected to the card reader 34 and the input unit 36. This security device encrypts sensitive data such as account number, PIN code, balance and the like prior to transmission, so that no unauthorised person can have access to this sensitive information. The encryption may be performed using suitable encryption technology. The system 30 also comprises a communication means 40 for communication with the bank where the account is held. The communication means 40 may be included in a mobile telephone, telephone or modem. The system 30 may also comprise a presentation unit (not shown) for displaying information, e.g. menu selection.

The system 30 shown in Figure 2 may thus be incorporated into a mobile telephone, telephone or modem. If the system 30 is incorporated into a modem the modem can be connected to an ordinary telephone.

The method in accordance with Figure 1 can be performed using the system shown in Figure 2.

Figure 3 shows schematically various applications of the system 30 shown in Figure 2. As indicated by the arrows in Figure 3, the card 32 can be used together with a mobile telephone 50 for performing the method in accordance with Figure 1, for instance. The card 32 can also be used with special automatic charging equipment 52 in order to transfer money to the card 32. The card 32 can also be used with a POS terminal 54 (Point of Sale). The card 32 can also be used in an automatic cash dispenser 56 in order to withdraw cash, for instance. The mobile telephone 50 can communicate with a suitable bank 58, as shown.

Use of the system 30 shown in Figure 2 is not limited to the method described in Figure 1.

The invention is not limited to the embodiments shown. Several variations are feasible within the scope of the appended claims.

CLAIMS

1. A method for performing financial transactions with the aid of a mobile telephone, a telephone or a modem which method comprises the steps of:

- entering a code in the mobile telephone, telephone or modem for identification;
- entering an amount for a financial transaction;
- inserting a card into a card reader incorporated in the mobile telephone, telephone or modem;
- the mobile telephone, telephone or modem identifying the card;
- decreasing the balance on the mobile telephone, telephone or modem by said amount and increasing the balance on the card by said amount, or vice versa; and
- the mobile telephone, telephone or modem verifying the financial transaction.

2. A method for performing financial transactions as claimed in claim 1, **characterized** in that the card is a smart card.

3. A method for performing financial transactions as claimed in either of claims 1 or 2, **characterized** in that if the balance is less than said amount,

- that the mobile telephone, telephone or modem displays an error message; and
- that the user acknowledges the error message, whereupon the financial transaction is interrupted.

4. A method for performing financial transactions as claimed in any one of claims 1-3, **characterized** in that the code entered is a PIN code different from the PIN code required for opening the telephone function on the mobile telephone.

5. A method for performing financial transactions as claimed in any one of claims 1-4, **characterized** in that the procedure starts with the step of:

- the user selecting the type of transaction by a choice of menu on the mobile telephone, telephone or modem.

6. A method for performing financial transactions as claimed in any one of claims 1-5, **characterized** in that the owner of the mobile telephone, telephone or modem and the owner of the card via which the financial transaction is performed are one and the same person.

7. A method for performing financial transactions as claimed in any one of claims 1-5, **characterized** in that the owner of the mobile telephone, telephone or modem and the owner of the card via which the financial transaction is performed are not one and the same person.

8. A system (30) for performing financial transactions, which system (30) comprises:

- a card (32) comprising memory means and a data-processing device,
- a card reader (34) incorporated in a mobile telephone (50), telephone or modem,
- an input unit (36) incorporated in the mobile telephone (50), telephone or modem for entering identification code and the amount involved in the financial transaction, for instance,
- a security device (38) for encryption of data, connected to the card reader (34) and the input unit (36),
- a communication means (40) incorporated in the mobile telephone(50), telephone or modem and connected to the security device (38) for communication with the bank where the account is held.

9. A system (30) for performing financial transactions as claimed in claim 8, **characterized** in that the system (30) also includes a presentation unit for displaying information, e.g. menu selection, in the mobile telephone (50), telephone or modem.

10. A system (30) for performing financial transactions as claimed in either of claims 8 or 9, **characterized** in that said card (32) is a smart card (32).

11. A system (30) for performing financial transactions as claimed in any one of claims 8-10, **characterized** in that the identification code for the card (32) is a PIN code different from the PIN code for opening the telephone function of mobile telephone.

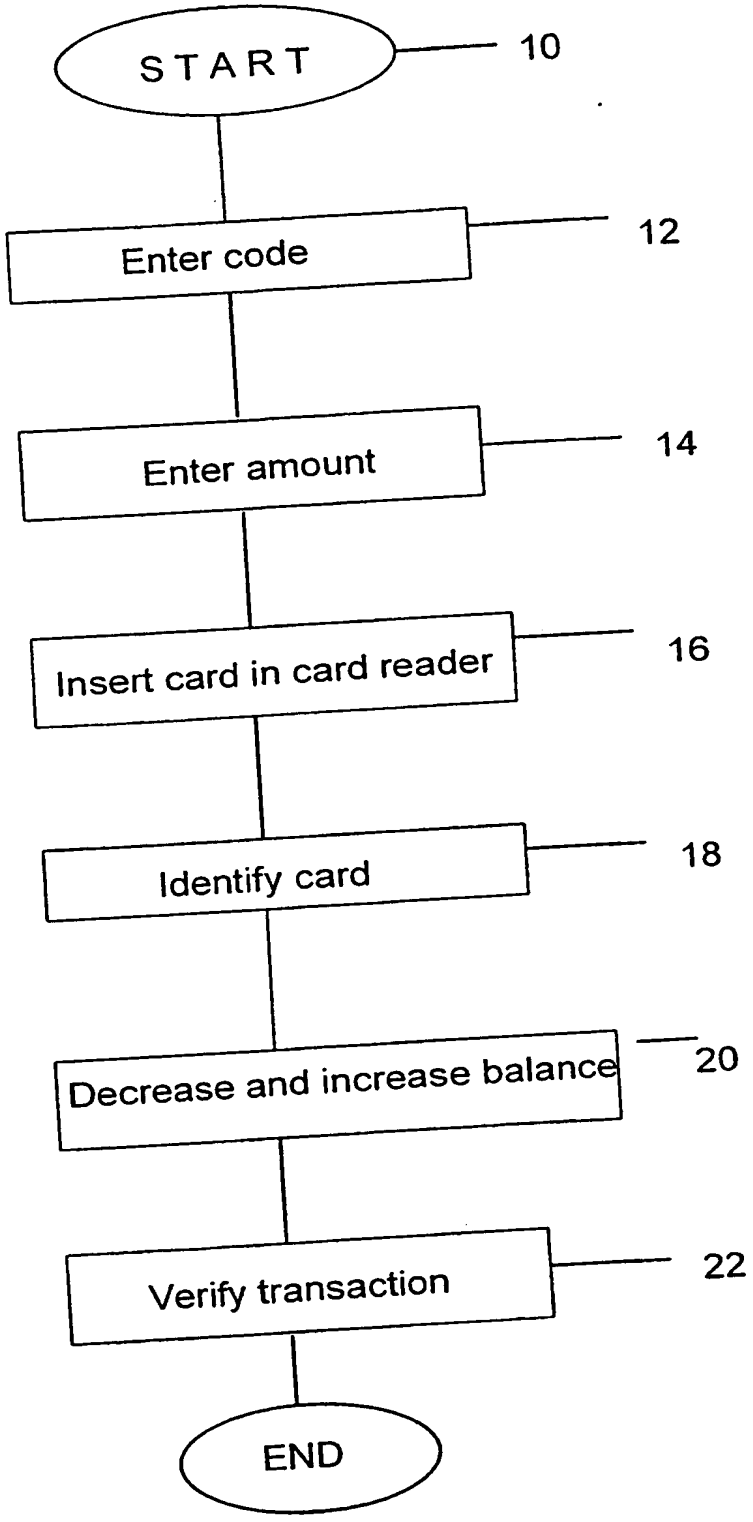
START
10
Enter code
12
Enter amount
14
Insert card in card reader
16
Identify card
18
Decrease and increase balance
20
Verify transaction
22
END

Fig. 1

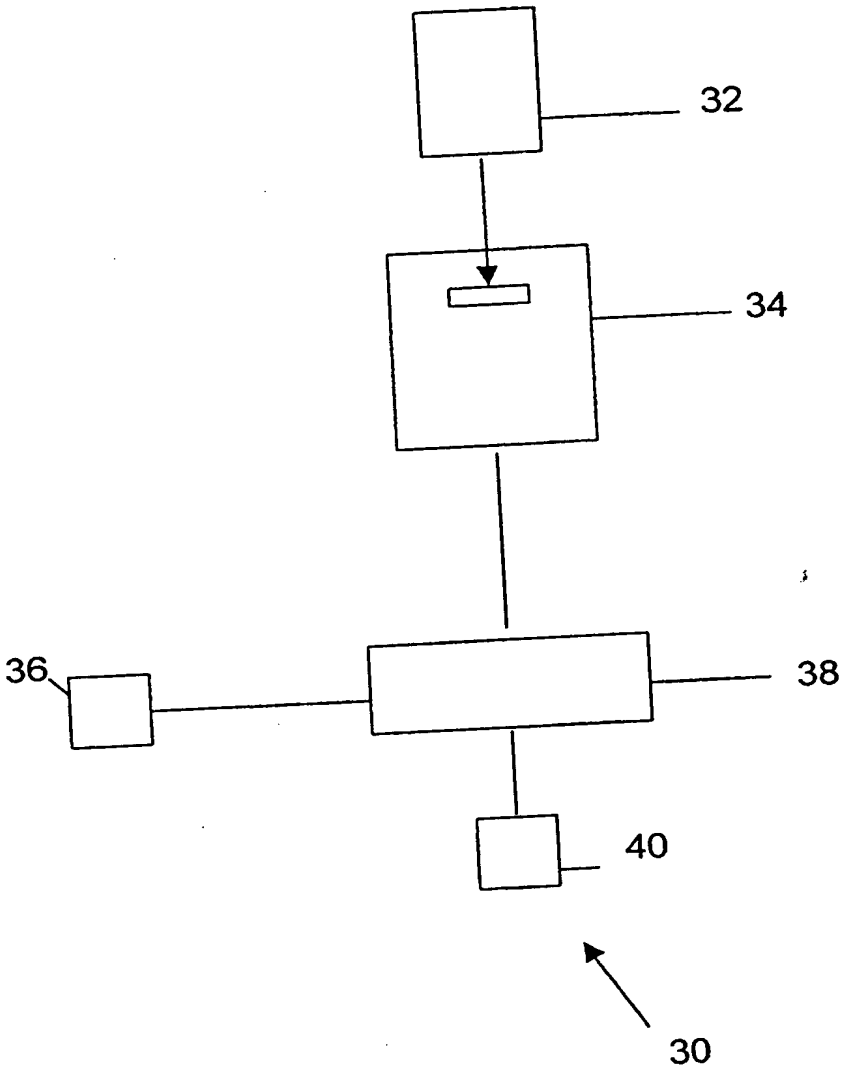

Fig. 2

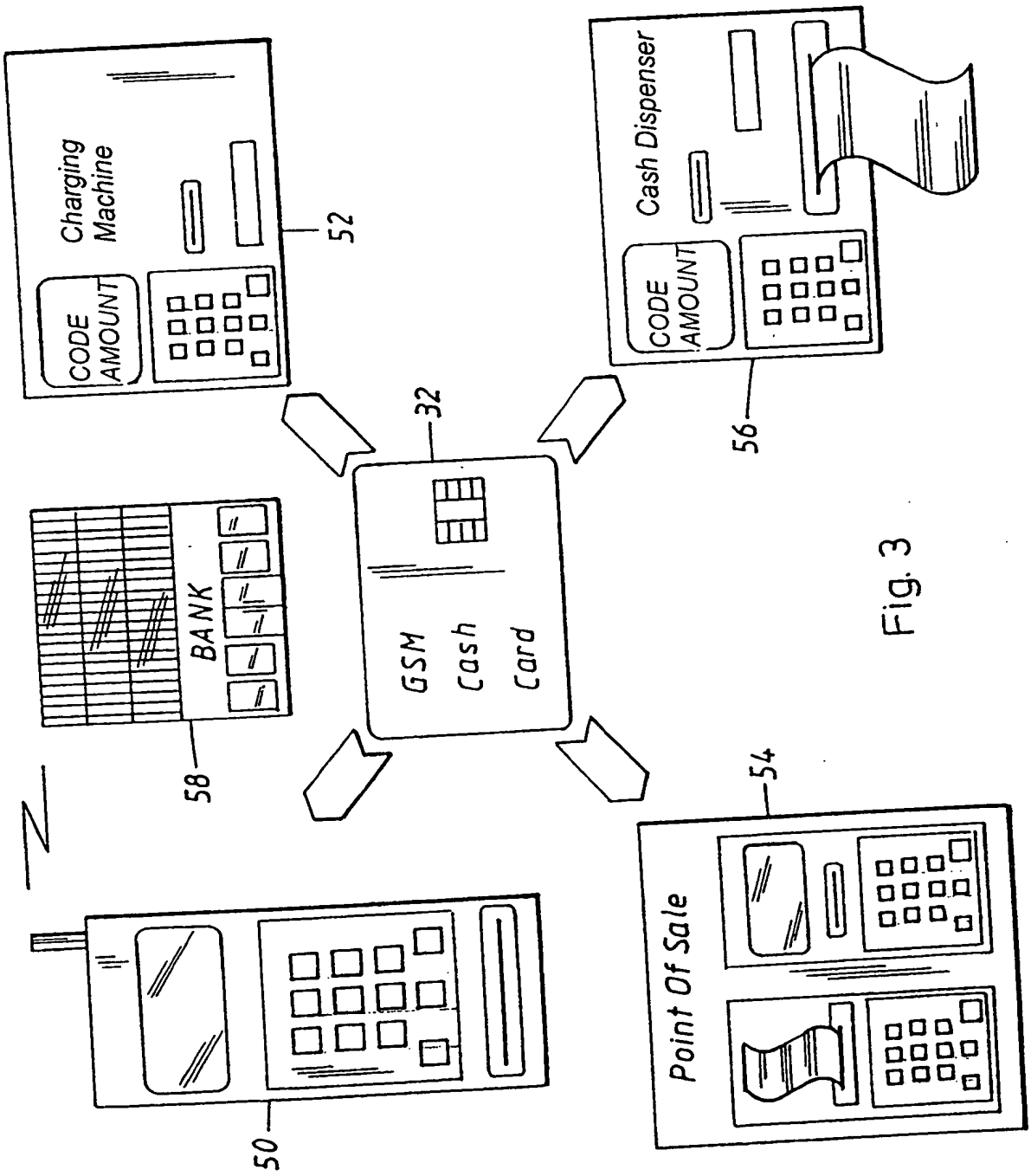
Charging Machine
CODE AMOUNT
52
Cash Dispenser
CODE AMOUNT
56
32
GSM Cash Card
BANK
58
54
Point Of Sale
50

Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 00/01499

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G07F 7/08, G07F 7/10
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G07F, G06K, H04M, H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 9952066 A1 (SWISSCOM AG), 14 October 1999 (14.10.99), page 4, line 13 - page 7 --	1,8
Y	WO 9625828 A1 (NOKIA MOBILE PHONES LTD.), 22 August 1996 (22.08.96), page 5, line 12 - line 20; page 13, line 3 - page 14; page 18, line 22, page 19 --	1,8
Y	WO 9858510 A1 (SWISSCOM AG), 23 December 1998 (23.12.98), whole document --	1,8
A	EP 0911772 A2 (CITICORP DEVELOPMENT CENTER, INC.), 28 April 1999 (28.04.99), whole document --	1-11

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29 November 2000	30 -11- 2000
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Inger Löfving / JA A Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 00/01499

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Information on patent family members

02/11/00

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